Spectrum Technology Platform

Version 9.0

Geocode Africa

Pitney Bowes Software

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Geocode Address Global for Africa

The Geocode Address Global with the Africa database provides street-level geocoding for many African countries. It can also determine city or locality centroids, as well as postal code centroids for selected countries.

These African countries are available and licensed as one bundle. Enterprise Geocoding Module Data Release Announcements will list and describe the countries included with the Africa database.

Note: South Africa is licensed as a separate database and is not part of the Africa bundle. Also Egypt is included with the Middle East bundle, not the Africa bundle.

The Africa database is an optional part of the Enterprise Geocoding Module. For more information about Enterprise Geocoding Module, including a listing of other components included with it, see **What is the Enterprise Geocoding Module?**.

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Input

Geocode Address Global with the Africa database takes an address as input. To obtain the best performance and the most possible matches, your input address lists should be as complete as possible, free of misspellings and incomplete addresses, and as close to postal authority standards as possible. Most postal authorities have websites that contain information about address standards for their particular country.

Input Fields

To obtain the best performance and the most possible matches, your input address lists should be as complete as possible, free of misspellings and incomplete addresses, and as close to postal authority standards as possible. Most postal authorities have websites that contain information about address standards for their particular country.

The following table lists the input fields used for geocoding locations in Africa.

Note: If you are using the API, specify input using the DataTable class. The fields described below are the valid column names in the DataTable class. For information on the DataTable class, see the "API Fundamentals" section of the *Spectrum™ Technology Platform API Guide*.

Table 1: Input Fields

Field Name	Description
AddressLine1	One of the following: • The address line containing the street name and building number. For example: **Rua Jose Anchieta** Luanda **Boulevard Du 28 Novembre** Bujumbura **Rue 1823** Cotonou **Rue 28.263** Ouagadougou **Kushimbara Road** Gaborone **Avenue du Docteur Jamot** Douala **Boulevard Patrice Lumumba** Kinshasa **Avenue Coutassi** Brazzaville **Avenue Gabriel Lendoye** Libreville

Field Name	Description
	Mamleshie Road Accra **Taratibu Street** Mombasa **Mpilo Road** Maseru **Avenue Moukhtar Soussi** 28630 Ain Harrouda **Rue 97** Bamako **Avenida 24 De Julho** Maputo **Rue Ely ould Mohamed** Nouakchott **Victor Hugo Street** Beau Bassin **Presidential Way** Lilongwe **Katanga Street** Swakopmund **Avenue de l'Afrique** Niamey **Limpopo Street** Abuja **Avenue De La Gendarmerie** Kigali **Rue GY 501** Dakar **Mbangweni Street** Mbabane **De La Marina Boulevard** Lomé **Rue Aflatoun** Ben Arous **Kiyungi Street** Dar es Salaam **Rubaga Road** Kampala **Freedom Way** Kitwe **Skirwith Road** Bulawayo

Field Name	Description
	• This field can also contain the full address. For more information, see **Single Line Input** on page 12
AddressLine2	This field is not used with countries included with the African bundle (Product Code XA1) or the Middle East bundle (Product Code ME1). The African and Middle Eastern countries generally have less comprehensive address coverage.
City	The city or town name. Your input address should use the official city name.
County	The meaning of county varies by country. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the African bundle (Product Code XA1). These African countries generally have less comprehensive address coverage.
FirmName	This field is not used with countries included with the African bundle (Product Code XA1). These countries generally have less comprehensive address coverage.

Field Name	Description
HouseNumber	The building number. You may get better parsing results for some countries if you put the house number in this field instead of AddressLine1. Not every country includes house number data. **Note:** The house number specified in the HouseNumber field takes precedence over any house number specified in the AddressLine1 field.
LastLine	The last line of the address. • Rua Jose Anchieta **Luanda** Boulevard Du 28 Novembre **Bujumbura** Rue 1823 **Cotonou** Rue 28.263 **Ouagadougou** Kushimbara Road **Gaborone** Avenue du Docteur Jamot **Douala** Boulevard Patrice Lumumba **Kinshasa** Avenue Coutassi **Brazzaville** Avenue Gabriel Lendoye **Libreville** Mamleshie Road **Accra** Taratibu Street **Mombasa** Avenue Moukhtar Soussi **28630 Ain Harrouda** Rue 97 **Bamako** Avenida 24 De Julho **Maputo** Rue Ely ould Mohamed **Nouakchott** Victor Hugo Street **Beau Bassin** Presidential Way **Lilongwe**

Field Name	Description
	Katanga Street **Swakopmund** Avenue de l'Afrique **Niamey** Limpopo Street **Abuja** Avenue De La Gendarmerie **Kigali** Rue GY 501 **Dakar** Mbangweni Street **Mbabane** De La Marina Boulevard **Lomé** Rue Aflatoun **Ben Arous** Kiyungi Street **Dar es Salaam** Rubaga Road **Kampala** Freedom Way **Kitwe** Kirwith Road **Bulawayo**
Locality	The meaning of locality varies by country: African and Middle East countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used

Field Name	Description
	• MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
PostalCode	The postal code in the appropriate format for the country. African and Middle East countries generally do not have postal code data.
StateProvince	The meaning of State/Province varies by country. African and Middle East countries do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used

Field Name	Description
	• ZWE (Zimbabwe)—Not used

Address Guidelines for Africa

Geocode Address Global with the Africa database provides street-level, city, or geographic geocoding for many African countries. These countries are bundled as the Africa database (Product Code XA1).

Follow these guidelines to provide input that Geocode Address Global can successfully geocode African addresses.

- **Required fields**—Addresses must contain a city.
- **Thoroughfare types**—Thoroughfare types and their common abbreviations are recognized and fully supported on input and output.
- **Common words and abbreviations**—The geocoder recognizes common words, directionals, house number indicators, and abbreviations used in addresses and can geocode these addresses successfully.

Note: Postal geocoding is generally not available with the African database. Morocco (MAR) is the only country in the XA1 Africa database that has postal code data, and therefore the only country in this database that supports postal geocoding.

If the input includes a state/province or locality and that input is matched, it does contribute to a higher candidate ranking. However, there is no penalty if state/province or locality is omitted or unmatched.

Single Line Input

Instead of entering each address element in separate fields, you may enter the entire address in the AddressLine1 input field.

For all countries except Japan, you can enter addresses in one or more of these single-line formats.

Note: Not all formats work may work for every country.

```
StreetAddress;PostalCode;City
StreetAddress;City;PostalCode
StreetAddress;City
StreetAddress;City;StateProvince;PostalCode
StreetAddress;Locality
StreetAddress;County;City
PostalCode;StreetAddress
PostalCode;StreetAddress;City
City;PostalCode;StreetAddress
```

Other single-line formats may also be acceptable for many countries.

The matching accuracy for single line input is comparable to that of structured address input. The performance of single line input addresses may be slightly slower than that of structured address input.

```
Rua JOSE Anchieta;Luanda
Boulevard Du 28 Novembre;Bujumbura
Rue 1823; Cotonou
```

```
Rue 28.263 Ouagadougou
Kushimbara Road;Gaborone
Avenue du Docteur Jamot;Douala
Boulevard Patrice Lumumba;Kinshasa
Avenue Coutassi;Brazzaville
Avenue Gabriel Lendoye;Libreville
Taratibu Street;Mombasa
Mpilo Road; Maseru
Avenue Moukhtar Soussi; 28630 Ain Harrouda
Rue 97;Bamako
Avenida 24 De Julho;Maputo
Rue Ely ould Mohamed;Nouakchott
Victor Hugo Street Beau;Bassin
Presidential Way;Lilongwe
Katanga Street;Swakopmund
Avenue de I'Afrique;Niamey
Limpopo Street;Abuja
Avenue De La Gendarmerie;Kigali
Rue GY 501; Dakar
Mbangweni Street; Mbabane
De La Marina Boulevard;Lomé
Rue Aflatoun Ben;Arous
Kiyungi Street;Dar es Salaam
Rubaga Road; Kampala
Freedom Way, Kitwe
Kirwith Road, Bulawayo
```

Punctuation is ignored for geocoding purposes.

Guidelines for Single Line Input

- Punctuation is generally ignored, however you may improve results and performance by using separators (commas, semicolons, etc.) between different address elements.
- The country is not required. Each country geocoder assumes that the address is in its country.
- Firm information (placename, building name, or government building) is returned if available.

Options

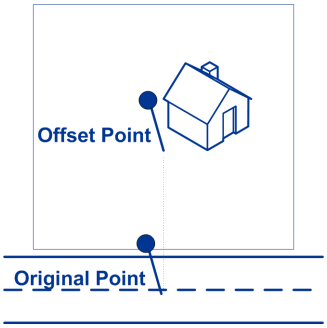
Geocode Address Global allows you to set default processing options through the Management Console. You can override certain settings for individual calls to Geocode Address Global using the API or Spectrum™ Technology Platform client tools, such as Enterprise Designer.

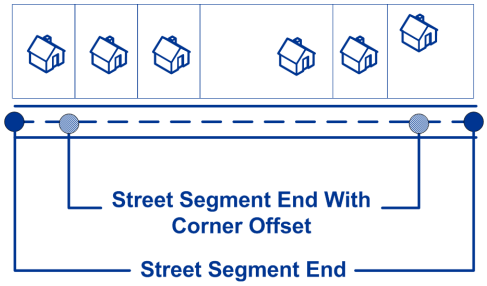
Geocoding Options

The following table lists the options that control how a location's coordinates are determined.

Table 2: Default Geocoding Options

Option Name	Description
Geocode level	Specifies how precisely you want to geocode addresses. One of the following: **Street address** — The geocoder attempts to geocode addresses to a street address, but some matches may end up at a less precise location such as a postal code centroid, intersection, or shape path. **Postal centroid** — The majority of African countries and Middle Eastern countries do not include postal code data, and therefore do not support postal centroid geocoding.If postal code data is available, the geocoder attempts to geocode addresses to the most precise postal code it finds. The advantage of postal code centroid matching is the speed of the operation. The disadvantage of postal code matching is that the geocoder only examines the PostalCode field. If you use street address precision, the geocoder looks at both the street name and the PostalCode field and attempts to return street-level coordinates and optionally fall back to postal code coordinates. **Geographic centroid** — The geocoder attempts to geocode addresses to the geographic centroid of a city or state. This option is not available for the United Kingdom (GBR).
Address point interpolation	Specifies whether to perform address point interpolation. This option only works if you have a point database, installed. This option is available for selected countries only. Address point interpolation uses point data to refine geocode results. By default, the geocoding process estimates the location of an address based on the street numbers at either end of street segment. For example, if a street segment runs from 100 Main St. to 200 Main St., then a request for 150 Main St. will return a location in the middle of the segment. With interpolation, the geocoder finds the position of 180 Main St. in the point data, and it is about two-thirds of the way down the street. Using this information, the geocoder can estimate the position of 150 Main St. based on 100 and 180 Main St. In this case, the geocoder estimates the location of the address slightly away from the center of the segment.
Geographic centroid	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined. This option is not available for the United Kingdom (GBR).
Postal centroid	Specifies whether to attempt to determine a postal code centroid when an address-level geocode cannot be determined.

Option Name	Description
	The majority of African countries and Middle Eastern countries do not include postal code data, and therefore do not support postal centroid geocoding.
Offset from street	Indicates the offset distance from the street segments to use in street-level geocoding. The distance is specified in the units you specify in the **Units** field. The default value varies by country. For most countries, the default is 7 meters. The offset distance is used in street-level geocoding to prevent the geocode from being in the middle of a street. It compensates for the fact that street-level geocoding returns a latitude and longitude point in the center of the street where the address is located. Since the building represented by an address is not on the street itself, you do not want the geocode for an address to be a point on the street. Instead, you want the geocode to represent the location of the building which sits next to the street. For example, an offset of 50 feet means that the geocode will represent a point 50 feet back from the center of the street. The distance is calculated perpendicular to the portion of the street segment for the address. Offset is also used to prevent addresses across the street from each other from being given the same point. The following diagram shows an offset point in relation to the original point.  Street coordinates are accurate to 1/10,000 of a degree and interpolated points are accurate to the millionths of a degree.
Offset from corner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the **Units** field.This value is used to prevent addresses at street corners from being given the same geocode as the intersection. **Note:** Offset is not supported for the United Kingdom (GBR) or Japan (JPN). The default value varies by country: • 12 meters—Australia (AUS), Austria (AUT), Germany (DEU) • 7 meters—For other supported countries, the default offset is 7 meters. The following diagram compares the end points of a street to offset end points.

Option Name	Description
	
Units	Specifies the unit of measurement for the street offset and corner offset options. One of the following: **Note:** Offset is not supported for the United Kingdom (GBR) or Japan (JPN). • Feet • Miles • Meters • Kilometers The default is Meters.
Coordinate system	A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG). Each country supports different coordinate systems. Depending on the country, you have one or more of the following options:

Matching Options

Matching options let you set match restrictions, fallback, and multiple match settings so that the matching can be as strict or relaxed as you need. The strictest matching conditions require an exact match on house number, street name, postal code and no fallback to postal code centroids. The geocoder looks for an exact street address match within the postal code in the input address. Relaxing the conditions broadens the area in which it searches for a match. For example, by relaxing the postal code, the geocoder searches for candidates outside the postal code but within the city of your input address.

Table 3: Default Matching Options

Option Name	Description
Keep multiple matches	Specifies whether to return results when the address matches to multiple candidates in the database. If this option is not selected, an address that results in multiple candidates will fail to geocode. If you select this option, specify the maximum number of candidates to return next to the check box. Specify -1 (minus one) to return all possible candidates.

Option Name	Description
Return ranges	Specifies whether to return address range information. If you enable this option, the output field `Ranges` will be included in the output. A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building.
Maximum ranges per candidate	If you choose to return ranges, this option specifies the maximum number of ranges to return for each candidate. Since the geocoder returns one candidate per segment, and since a segment may contain multiple ranges, this option allows you to see the other ranges in a candidate's segment.
Maximum units per range	If you choose to return ranges, this option specifies the maximum number of units (for example, apartments or suites) to return for each range. For example, if you were to geocode an office building at 65 Main St. containing four suites, there would be a maximum of four units returned for the building's range (65 Suite 1, 65 Suite 2, 65 Suite 3, and 65 Suite 4. If you were to specify a maximum number of units as 2, then only two units would be returned instead of all four.
Close matches only	Specifies whether to return only those geocoded results that are close match candidates. For example, if there are 10 candidates and two of them are close candidates, and you enable this option, only the two close matching candidates would be returned instead of all 10. To specify what is considered a close match, use the **Close match criteria** options. Address candidates are ranked according to how closely the input address matches these preferences.
Match mode	Specifies how to determine whether a candidate is a close match. One of the following: **Custom** — This option allows you to specify which parts of a candidate address must match the input address to be considered a close match. Use the **Close match criteria** check boxes to specify the address elements you want. **Relaxed** — All candidate addresses are considered a close match.
All input	Specifies whether candidates must match all non-blank input fields to be considered a close match. For example, if an input address contains a city and postal code, then candidates for this address must match the city and postal code to be considered a close match.
House number	Specifies whether candidates must match the house number to be considered a close match. The Africa and Middle East countries do not generally have house numbers in the data source. If you select this option you should also require an exact match on street name. This option does not significantly affect performance. It does, however, affect the type of match if the candidate address corresponds to a segment that does not contain any ranges. The type of match can also be affected when the house number range for a candidate does not

Option Name	Description
	contain the input house number. If you relax the house number, you should set the maximum ranges to be returned to a value higher than 0.
Street	Specifies whether candidates must match the street name to be considered a close match. If a close match is found, the geocoder attempts expanded street name manipulation, which looks for candidates with names that sound like the input address or that are spelled improperly. This slows down performance but increases the match rate . If the geocoding database is indexed, the performance impact is reduced.
Locality	Specifies whether candidates must match the locality (or equivalent) to be considered a close match. The meaning of Locality varies for different countries. If you do not require exact matches on locality, the geocoder searches on the street address matched to the particular postal code, and considers other localities that do not match the name, but do match the postal code. The majority of African and Middle East countries do not use locality or equivalent as part of an address. If a locality is matched it can contribute to a higher candidate ranking, but there is no penalty if locality is omitted or unmatched. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used

Option Name	Description
City	Specifies whether candidates must match the city to be considered a close match. For Japan, this field specifies whether the candidate must match the municipality subdivision (oaza). If you do not require exact matches on city, the geocoder searches on the street address matched to the particular postal code, and considers other cities that do not match the name, but do match the postal code.
County	Specifies whether candidates must match the county (or equivalent) to be considered a close match. The meaning of county varies for different countries. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
State/Province	Specifies whether candidates must match the state or province (or equivalent) to be considered a close match. The majority of African and Middle East countries do not use a state/province or equivalent as part of an address. If a state/province is matched it can contribute to a higher candidate ranking, but there is no penalty if state/province is omitted or unmatched. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used

Option Name	Description
	• CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
Postal code	Specifies whether candidates must match the postal code to be considered a close match. If you do not require exact match on postal codes, the geocoder searches a wider area for a match. While this results in slower performance, the match rate is higher because the request does not need to match exactly when it compares match candidates.

You may want to use a balanced strategy between match rate and geographic precision. That is, you may want to geocode as many records as possible automatically, but at the same time want to minimize the number of weaker matches (false positives). For example, false positives can occur when the geocoder:

- finds a street that sounds like the input street.
- finds the same street in another city (if postal code match is not required).
- finds the street but with a different house number (if house number is not required).

The following settings may achieve a good balance between match rate and precision:

- **Close matches only**—Select this option.
- **Close match criteria**—Select **House number** and **Street** only.
- **Postal centroid**—Do not select this fallback level.

Data Options

The Data tab allows you to specify which databases to use in geocoding. Databases contain the address and geocode data necessary to determine the geocode for a given address. There are two kinds of databases: standard databases and custom databases. Standard databases are those supplied by

Pitney Bowes Software and based on address and geocoding data from postal authorities and suppliers of geographical data. Custom databases are databases you create to enhance or augment standard databases for your particular needs.

The following table lists the options available for specifying which databases to use and the search order of databases.

Table 4: Default Data Options

Option Name	Description
Database	Specifies the database to be used for geocoding. Only databases that have been defined in the Databases Resources panel in the Management Console are available.
Database preference	Specifies which geocoding databases to use. One of the following: **Prefer custom database** — Use both standard databases and custom databases, but give preference to candidates from custom databases. Use this option if you feel your custom database is superior to the standard database. **Prefer standard database** — Use both standard databases and custom databases, but give preference to candidates from standard databases. **Use custom databases only** — Use only custom databases. Ignore standard databases. **Use standard databases only** — Use only standard databases. Ignore custom databases. **Use both custom and standard databases** — Use both standard databases and custom databases. In cases where candidates are returned from both, the standard database is preferred. Default. The results from a custom database have a "U" at the end of the result code. Results from an address database have an "A" at the end of the match score. For example: S5HPNTSCZA is a match score that comes from an address database, while S5HPNTSCZU comes from a custom database. For more information, see **Result Codes for International Geocoding**.
Override the default database search list	Specifies whether to use the database search list specified in the Management Console under the database resources tools (**Modules** > **Enterprise Geocoding** > **Tools**). If you choose to override the default database search list you may change the search order of the databases in the **Database search list** field. You may also remove databases from the search list. If you override the default database search list, changes to the database resources will not be reflected in the database search list, which may cause geocoding to fail. However, if you do not override the default database search order, any changes to the database resources will be automatically reflected by the geocoder. For example, if a database resource is moved from one directory to another and you update the database resources accordingly (**Modules** > **Enterprise Geocoding** > **Tools**) the database location will be automatically updated in the geocoder.

Option Name	Description
Database search list	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console's Database Resources tool. You can specify multiple database resources. If you specify more than one database, list them in order of preference. The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches. You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.

Output Data Options

The following table lists the options that control which data is returned in the output.

Table 5: Output Data Options

Option Name	Description
Return only similar firm names	This option applies to the U.K. only. Specifies whether to return firm names only when the input firm name is similar to the firm name in the geocoding database. For example, if the input firm name is "Pitney Bowes Business Insight" but the geocoding database returns "Pitney Bowes Software, Inc.", these two firm names are not similar. In most cases the input firm name must match the firm name in the database exactly. Some differences in abbreviations are considered similar enough to result in the firm name being returned.

Output

The geocoder returns the latitude/longitude, standardized address, and result indicators. Result indicators describe how well the geocoder matched the input address to a known address and assigned a location; they also describe the overall status of a match attempt. If you are using the API, t of the *Spectrum™ Technology Platform API Guide*

Address Output

The address may be identical to the input address if the input address was accurate, or it may be a standardized version of the input address, or it may be a candidate address when multiple matches are found.

Table 6: Address Output

Field Name	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentNumber	Unit number.
City	The name.
Country	The three-letter ISO 3166-1 Alpha 3 country code.
County	The meaning of county varies by country. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the African bundle (Product Code XA1). These African countries generally have less comprehensive address coverage.
FirmName	Name of the company or a place name.
HouseNumber	The number for the matched location.

Field Name	Description
HouseNumberHigh	The highest house number of the range in which the address resides.
HouseNumberLow	The lowest house number of the range in which the address resides.
HouseNumberParity	Indicates if the house number range contains even or odd numbers or both. **E** Even **O** Odd **B** Both **U** Unknown
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
Locality	The meaning of locality varies by country: African and Middle East countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used

Field Name	Description
	• ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building. To specify the number of ranges to return for each candidate, use the **Maximum ranges per candidate** option.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite. To specify the number of units to return for each range, use the **Maximum units per range** option.
PostalCode	The postcode for the address. The format of the postcode varies by country. Postcode data is not available for every country.
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.
PrivateMailbox	This field is not currently used.
Ranges	This is a list field containing the address ranges that exist on the street segment where the candidate address is located. A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building. The Ranges field contains the following sub-fields: **Address** — This is a list filed that contains sub-fields for any address elements (AddressLine1, City, and so on) that are different from the candidate's address. **AdditionalFields** — A listing of country-specific information related to the address. The information contained in AdditionalFields varies by country. **HouseNumberHigh** — The highest address number for the range. **HouseNumberLow** — The lowest address number for the range. **SegmentParity** — Indicates the side of the street where the range is located. One of the following: **0** It is not known which side of the street the range is located on. **1** The range is on the left side of the street. **2** The range is on the right side of the street.

Field Name	Description
	HouseNumberParity Indicates whether the range contains odd or even address numbers. One of the following: **0** The range contains both odd and even address numbers. **1** The range contains odd address numbers **2** The range contains even address numbers. **-1** It is not known whether the range contains odd or even house numbers.
	TotalRangeUnitsReturned The number of unit ranges returned for the address. A unit is an address within a building, such as an apartment or suite.
	RangeUnits A list of the ranges of units within the building. An example of units are apartments or suites. **Address** This is a list filed that contains sub-fields for any address elements (AddressLine1, City, and so on) that are different from the candidate's address. **UnitNumberHigh** The highest unit number. **UnitNumberLow** The lowest unit number.
SegmentCode	A unique ID that identifies .
SegmentParity	Indicates which side of the street has odd numbers. **L** Left side of the street **R** Right side of the street **B** Both sides of the street **U** Undetermined
StateProvince	The meaning of State/Province varies by country. African and Middle East countries do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used

Field Name	Description
	• COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The street type of the matched location. For example, AVE for Avenue.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.
UnitNumberLow	The lowest unit number of the range in which the unit resides.

Geocode Output

Table 7: Geocode Output

Field Name	Description
CoordinateSystem	The coordinate system used to determine the latitude and longitude coordinates. A coordinate system specifies a map projection, coordinate units, etc. An example is EPSG:4326. EPSG stands for European Petroleum Survey Group.
Latitude	Seven-digit number in degrees and calculated to four decimal places (in the format specified).
Longitude	Seven-digit number in degrees and calculated to four decimal places (in the format specified).

Result Codes

Result codes contain information about the success or failure of the geocoding attempt, as well as information about the accuracy of the geocode.

Table 8: Result Code Output

Field Name	Description
Geocoder.MatchCode	Indicates how closely the input address matches the candidate address.
IsCloseMatch	Indicates whether or not the address is considered a close match. An address is considered close based on the "Close match criteria" options on the Matching tab. **Y** Yes, the address is a close match. **N** No, the address is not a close match.
MultiMatchCount	For street address geocoding, the number of matching address positions found for the specified address. For intersection geocoding, the number of matching street intersection positions found for the specified addresses.
Status	Reports the success or failure of the match attempt **null** Success **F** Failure
Status.Code	If the geocoder could not process the address, this field will show the reason. • Internal System Error • No Geocode Found • Insufficient Input Data • Multiple Matches Found • Exception occurred

Field Name	Description
	• Unable to initialize Geocoder • No Match Found
Status.Description	If the geocoder could not process the address, this field will show a description of the failure. **Problem + explanation** — Returned when Status.Code = Internal System Error. **Geocoding Failed** — Returned when Status.code = No Geocode Found. **No location returned** — Returned when Status.code = No Geocode Found. **No Candidates Returned** — The geocoder could not identify any candidate matches for the address. **Multiple Candidates Returned and Keep Multiple Matches not selected** — The address resulted in multiple candidates. In order for the candidate address to be returned, you must select the **Keep multiple matches** option.
LocationPrecision	A code describing the precision of the geocode. One of the following: **0** — No coordinate information is available for this candidate address. **1** — Interpolated street address. **2** — Street segment midpoint. **3** — Postal code 1 centroid. **4** — Partial postal code 2 centroid. **5** — Postal code 2 centroid. **6** — Intersection. **7** — Point of interest. **8** — State/province centroid. **9** — County centroid. **10** — City centroid. **11** — Locality centroid. **12 - 15 (LocationPrecision codes)** — For most countries, LocationPrecision codes 12 through 15 are reserved for unspecified custom items. **13** — Additional point precision for unspecified custom item. **14** — Additional point precision for unspecified custom item. **15** — Additional point precision for unspecified custom item. **16** — The result is an Address Point.

Field Name	Description
	17 The result was generated by using address point data to modify the candidates segment data.
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.

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